tion. If he refers to the reports of the British Association for 1898 he will find that Poulton and his assistants have proved that the pupæ of *Vanessa urticae* are subject to a severe struggle for existence from birds at Oxford and the Isle of Wight, and that in this case the resemblance in colour of the pupæ to the surroundings is of prime importance in the struggle.

In the face of such evidence as this the statement on p. 386 that it is pure chance which of the seeds of a tree or which of the eggs of an animal survives requires some better proof than we have at present before it is acceptable. The evidence of Guy Marshall in his valuable papers on the bionomics of South African insects adds very materially to the support of the theory of natural selection, and naturalists may rest assured that, notwithstanding the vigour and the ability with which this, the latest, attack upon their trenches has been delivered, the defence of the theory of natural selection is still intact. SYDNEY J. HICKSON.

ASSAYING IN THE COLONIES.

Metallurgical Analysis and Assaying. By W. A. Macleod, B.A., B.Sc., A.O.S.M. (N.Z.), and Chas. Walker, F.C.S. Pp. xii+318; with 109 figures in the text. (London: Charles Griffin and Co., Ltd., 1903.) Price 12*s.* 6*d.* net.

THE aim of this work, as explained by the authors in the preface, is to provide a "graded course of work, leading from simple qualitative analysis up to the technical quantitative methods employed by the modern metallurgical chemist," and is intended to cover a period of three years' laboratory work.

The book is divided into three parts, of which part i., containing 50 pages, deals with qualitative analysis and the properties of gases, and part ii., containing 140 pages, deals mainly with quantitative analysis. Part iii., comprising 118 pages, is subdivided into two sections, the first treating of the ordinary methods of fire assaying, while the second gives an outline of the methods employed in some well-chosen examples of technical analyses.

The authors do not claim any originality of matter, but simply novelty in arrangement which is adapted to meet the requirements of students of schools of mines, "more especially of colonial schools of mines." This distinction between colonial and other schools of mines is difficult to understand, for the work which a qualified metallurgical chemist is required to undertake is independent of the locality in which he has received his training, and if the course of study is to be broad and efficient, a text-book which is suitable for one school of mines will be equally suitable for all. At any school of mines the students must be well grounded in the principles of assaying, so that they can understand, test, and practise any method that is subsequently presented to them.

It is obvious, for example, that the study of assaying should be preceded by a course in chemistry, but this can hardly be included amongst the duties of the instructor in assaying. It would be better that the chapters dealing with such subjects as glass working, the preparation and properties of gases, and elementary qualitative analysis should be omitted, and the matter left to the discretion of the professor of chemistry. Moreover, there are so many excellent text-books dealing with this part of the subject that it seems a pity that the authors should have sought to include it in this volume.

Part iii. has been carefully prepared, and the explanations are invariably clear and concise. Unfortunately, however, it suffers from want of space, and might well be expanded at the expense of some of the earlier chapters of the book. Thus the assay of tin ores is dealt with in a chapter of two pages, and that of lead ores occupies only three pages. Silver also receives three pages, and copper, sulphur, and mercury are dismissed in a short chapter of two pages. In spite of this enforced brevity, however, the authors have made the most of the space at their disposal, and the methods they describe are up to date and trustworthy. No pains have been spared in consulting and quoting from the work of recognised authorities on assaying, but it is doubtful whether the frequent reference to divergent opinions may not, in itself, constitute a source of danger. For example, the student who is told that the length of time required for the fusion of a tin assay by the cyanide method is variously estimated by different writers at from 3 to 30 minutes may be tempted to think that he also can vary the time of fusion within these limits, and still obtain satisfactory results. The importance of uniformity in working cannot be too strongly impressed upon the beginner.

The mistakes are remarkably few and unimportant, and the publication of this volume tends to prove that the teaching of metallurgical analysis and assaying in Australia rests in competent hands.

OUR BOOK SHELF.

The Direction of Hair in Animals and Man. By W. Kidd. Pp. xii+154; illustrated. (London: A. and C. Black, 1903.) Price 5*s.* net.

ALTHOUGH it is quite natural that every student should consider his own pet subject one of special importance, we cannot think that Dr. Kidd has sufficient justification for publishing a second work on the hair-slope of mammals, since the volume before us does not appear to carry the case materially further than was done in "Use-Inheritance." Indeed, since the author himself (p. 122) is fain to admit that hair-whorls, featherings, &c. (as he terms the various abnormalities in the direction of the hair) are variable, intrinsically unimportant, and even whimsical, we should have thought that enough had been made of them in the earlier work. If further evidence of their variability and slight morphological importance be considered necessary, we may refer to Prof. Ray Lankester's recent description of the condition existing in two specimens of the okapi, one of which shows a single and the other a double whorl on the forehead. If, however, the author and his publishers find the public sufficiently interested in the subject to absorb a second work, they have, from their own point of view, a sufficient justification for its issue.

Briefly stated, Dr. Kidd's theory appears to be as follows. In certain mammals, notably many long-bodied and short-limbed carnivores, and many rodents, marsu-

pials, marmosets and lemurs, the hair is found to be uniformly directed backwards from head to tail, and downwards from the flanks to the toes. From this presumed primitive condition there are numerous instances of reversal of the direction, accompanied by the aforesaid whorls and featherings at "critical" points, such points being correlated, in many instances at least, with subjacent centres of muscular activity.

Natural selection, it is urged, will not account for these diversities, and we must, therefore, fall back upon habit or use as the inducing cause. This being admitted, it follows, according to Dr. Kidd, that "use-inheritance" is a factor in nature, and consequently that the doctrine of "non-inheritance of acquired characters" is untrue.

The author concludes his argument by asserting that attempts to bring his facts within the domain of natural selection will be ineffectual; and that if any persons are induced to discredit his arguments by the assertion that as Weismann's doctrine holds good in other instances it ought to obtain in the present case, this is not science. With this we leave the case to the judgment of our readers.

We cannot, however, conclude without directing attention to the numerous "misprints" with which Dr. Kidd's work is disfigured, errors that might have been corrected by half-an-hour's visit to the British Museum. To take only the tables on pp. 153 and 154, we find the following errors, viz *jumela* for *jimela*, *Budonas* for *Budorcas*, *jenlaicus* for *jemlaicus*, *senegamus* for *senganus*, *Œpyceros* for *Æpyceros*, *sömmering* for *soemmerringi*, *madogna* for *Madoqua*, *nalabatus* for *ualabatus*, and *elephus* for *elaphus*. And there is an *erratum*-slip in which not one of these is noted! We may add that the author appears to be unaware of the existence of the name Böocercus for the bongo antelope.

R. L.

South African Flowering Plants. By Prof. G. Henslow. Pp. xii+300. (London: Longmans and Co., 1903.) Price 5*s*.

THIS book is intended to serve as a guide to students and teachers in South Africa who desire to become acquainted with the more important features of their native flora. Types of the principal orders are described, and instructions given for the practical examination of the different floral structures. The general choice of orders and genera is quite judicious; there are certain omissions, such as Asclepias and Schizoglossum in the Asclepiadeæ, and Helichrysum in the Compositæ, and the inclusion of a larger number of genera, even though only briefly described, would have been advantageous. But regarded as a whole, the systematic portion of the book should fulfil its purpose, and help towards a knowledge of the subject. The introductory chapters are not so satisfactory, for the general account of form and function is weak, occasionally incorrect, and the ecological discussion much too short to enable the reader to comprehend the very many striking peculiarities which characterise the flora of the country. And in the chapter on the structure of the flower the author has presented a dull and mechanical treatment of what might be made an extremely interesting subject if taken from the developmental point of view.

Die Bildnis-Photographie. Ein Wegweiser für Fachmänner und Liebhaber. By Fritz Loescher. Pp. xii+180; mit 98 Abbildungen. (Berlin: Gustav Schmidt, 1903.) Price 4.50 marks.

THE author confines himself solely to portrait photography in this book, and a very complete treatise he has given us on the subject. Commencing with a brief historical sketch of the early methods of portraiture from the daguerreotype to the silver bromide.gelatine dry plate, on which he makes interesting comments, he then passes through the intermediate stages and describes the modern methods. The next chapter is devoted to the necessary instrumental equipment of a modern studio. This is followed by two chapters on portraiture in-doors and out-of-doors, another on working accessories, such as furniture, backgrounds, &c., and the last two on the production of the negative and positive.

Throughout the book the author has given a clear straightforward account of the various methods of procedure and has illustrated his remarks in a great number of cases by appropriate reproductions; in fact the illustrations form a distinctive feature of the book.

Those who make a speciality of portraiture and who can read German will, no doubt, find many useful wrinkles in these pages, for the author has taken advantage of the various methods practised in different countries and expounded them in their appropriate places.

Descriptive Chemistry. Parts i. and ii. By Lyman C. Newell, Ph.D. Pp. vi+488+135. (London: Heath and Co., 1904.) Prices 4*s*. 6*d*. and 1*s*. 6*d*.

ONE feels a certain amount of diffidence in reviewing a book which, either in the MS. or proof, has passed through the hands (so the preface states) of no less than eight distinguished American professors and teachers of chemistry, but the task is fortunately simplified by finding that the volume, with its small "experimental" companion, is written for teachers and not beginners.

One looks, therefore, more to the manner than to the matter of the book, but there is nothing in either the one or the other which seems to call for special comment. It is a conscientious, uninspired performance. It contains the usual information found in an elementary text-book presented in the usual form, with scraps of organic and physical chemistry, fragments of history, and a description of modern electrolytic processes. It is therefore well up to date, and as an *aide-mémoire* for the teacher is quite trustworthy, provided he expands and vitalises what is dull or unconvincing in the explanatory matter. The illustrations, though not numerous, are good. The picture of a platinum dish might be omitted as superfluous, and the illustration of calcite crystals might do very well for cleavage fragments, but does not represent the familiar forms of the mineral.

The American writers on elementary chemistry have not yet reached the level of their writers on nature-study, and the present volume seems to emphasise the fact that there is still room for a good chemistry for teachers.

J. B. C.

Onde hertziane e Telegrafo senza Fili. By Oreste Murani. Pp. 341; with 172 woodcuts. (Milan: Ulrico Hoepli, 1903.)

THIS is one of the Manueli Hoepli, and, in uniformity with other books of the same series, is of pocket size. In it Prof. Murani has endeavoured to bring some general knowledge as to the nature of wireless telegraphy within reach of those who start with no previous knowledge of electricity. Accordingly, we find in the earlier chapters figures of the proof-plane, the gold-leaf electroscope, the ice-pail, the frog's leg, the crown of cups and Ampère's swimmer, much as they used to figure in the text-books of our youth. The difference of the present book from these old handbooks is evident when we come to electric oscillations, Wehnelt interrupters, and ships with antennæ to their masts. The last two pages give a short biography of Mr. Marconi.